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Research Note

Nematodes of the Great Plains Narrow-mouthed Toad, *Gastrophryne olivacea* (Microhylidae), from Southern Arizona

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ABSTRACT: Thirty *Gastrophryne olivacea* from southern Arizona were examined for helminths. Two species of nematodes, *Aplectana incerta* and *Aplectana itzocanensis*, were found. Both represent new host records. *Aplectana itzocanensis* had the higher prevalence (70%) and greater mean intensity (13.0). In southern Arizona, *A. incerta* and *A. itzocanensis* also occur concurrently in other anurans.

KEY WORDS: *Gastrophryne olivacea*, Microhylidae, Nematodes, *Aplectana incerta*, *Aplectana itzocanensis*, Arizona.

The Great Plains narrowmouth toad, *Gastrophryne olivacea* (Hallowell, 1856), occurs from eastern Nebraska and western Missouri, through Oklahoma and Texas, west through northern México, into south central Arizona, from sea

level to 1250 m elevations (Stebbins, 1985). There are several reports of helminths in *G. olivacea*: Kansas (Freiburg, 1951), Oklahoma (Kuntz, 1941), and Texas (Harwood, 1932; McAllister and Upton, 1987). The purpose of this note is to report nematodes from a population of *G. olivacea* from southern Arizona.

Thirty *G. olivacea* (8 females, 22 males, mean snout-vent length = 27 mm ± 2.3 SD; range, 23–32 mm) were borrowed from the herpetology collection of the University of Arizona, Tucson (UAZ) 15824, 15826, 15827, 15830, 15833, 20561, 20563, 25858, 25861, 25863, 29026, 29027, 29032, 29035, 29036, 29039–29041, 29043, 29046–29049, 29051, 29052, 29055–29058, 32016. These specimens had been col-

Table 1. Known hosts of *Aplectana incerta* and *A. itzocanensis*.

Nematode host	Prevalence	Locality	Reference
<i>Aplectana incerta</i>			
<i>Bufo debilis</i>	69% (34/49)	New Mexico	Goldberg et al., 1995
<i>Bufo marinus</i>	Not given	Mexico	Caballero y C., 1949
<i>Bufo microscaphus</i>	1% (1/77)	Arizona	Goldberg et al., 1996a
<i>Bufo retiformis</i>	61% (30/49)	Arizona	Goldberg et al., 1996b
<i>Bufo woodhousii</i>	41% (25/61)	Arizona	Goldberg et al., 1996a
<i>Gastrophryne olivacea</i>	70% (21/30)	Arizona	(This paper)
<i>Scaphiopus couchii</i>	82% (62/76)	Arizona	Goldberg and Bursey, 1991a
<i>Spea multiplicata</i>	16% (5/31)	New Mexico	Goldberg et al., 1995
<i>Aplectana itzocanensis</i>			
<i>Bufo alvarius</i>	52% (49/95)	Arizona	Goldberg and Bursey, 1991a
<i>Bufo cognatus</i>	5% (1/21)	Arizona	Goldberg and Bursey, 1991a
	50% (18/36)	New Mexico	Goldberg et al., 1995
<i>Bufo debilis</i>	63% (31/49)	New Mexico	Goldberg et al., 1995
<i>Bufo marinus</i>	Not given	Costa Rica	Brenes and Bravo Hollis, 1959
	Not given	Mexico	Bravo Hollis, 1943
	Not given	Mexico	Caballero Deloya, 1974
<i>Bufo microscaphus</i>	19% (15/77)	Arizona	Goldberg et al., 1996a
<i>Bufo punctatus</i>	29% (6/21)	Arizona	Goldberg and Bursey, 1991b
<i>Bufo retiformis</i>	57% (28/49)	Arizona	Goldberg et al., 1996b
<i>Bufo woodhousii</i>	26% (16/61)	Arizona	Goldberg et al., 1996a
	Not given	California	Baker, 1985
<i>Gastrophryne olivacea</i>	40% (12/30)	Arizona	(This paper)
<i>Scaphiopus couchii</i>	<5%	Arizona	Tinsley, 1990
<i>Spea multiplicata</i>	Not given	Mexico	Bravo Hollis, 1943
	39% (12/31)	New Mexico	Goldberg et al., 1995

lected in oak-woodland habitat of the Pajarito Mountains (31°22'N, 111°04'W; elevation 914–1219 m), Santa Cruz County, Arizona, in 1961–1969, fixed in 10% formalin, and preserved in 70% isopropanol. The body cavity was opened, and the lungs, esophagus, stomach, small intestine, large intestine, bladder, and body cavity of each specimen examined.

The only helminths found were 2 species of nematodes: *Aplectana incerta* Caballero, 1949, and *Aplectana itzocanensis* Bravo Hollis, 1943. Each nematode was placed in a drop of glycerol on a glass slide; identifications were made from these temporary mounts. Representative samples were placed in vials of alcohol and deposited in the United States National Parasite Collection Beltsville, Maryland, accession numbers *Aplectana incerta* 87087 and *Aplectana itzocanensis* 87088.

Prevalence for *A. incerta* was 70%; mean intensity = 13 ± 12 SD; range, 2–38; prevalence for *A. itzocanensis* was 40%; mean intensity = 7 ± 8 SD; range, 1–28; infection sites were the small and large intestines. Eight *G. olivacea* had concurrent infections of both *A. incerta* and *A. itzocanensis*; 13 were infected with *A. incerta*

only, 4 were infected with *A. itzocanensis* only, 5 were not infected. There was no significant difference between male and female toads for either *A. incerta* or *A. itzocanensis* ($\chi^2 = 0.5$, 0.01, respectively, 1 df, $P > 0.05$).

Both *A. incerta* and *A. itzocanensis* have been found in other anurans (Table 1), but occurrences are limited to toads. *Aplectana incerta* and *A. itzocanensis* closely resemble one another (*A. incerta* having shorter spicules and larger eggs than *A. itzocanensis*). Baker (1985) has suggested that the reports of *A. itzocanensis* in *Bufo marinus* of Costa Rica and México are referable to *A. incerta*, which was described from southern México. Baker (1985) has also suggested synonymy of *Aplectana hoffmanni*, a species originally reported in *Bufo marinus* collected in Puebla, México, by Bravo Hollis (1943) with *A. itzocanensis*. This synonymy is reflected in Table 1.

Both *A. incerta* and/or *A. itzocanensis* have been found in other desert-dwelling anurans from southern Arizona and New Mexico (Table 1). Thus, host specificity for both of these helminths is low. The current distribution of *A. incerta* and *A. itzocanensis* (Table 1) suggests that

these may be middle-American species that reach their northern limits in the deserts of the southwestern United States.

The helminth fauna of *Gastrophryne olivacea* east of the continental divide is completely different from that reported in this study. In Texas, McAllister and Upton (1987) found specimens of the cestode, *Cylindrotaenia americana*, and the nematode, *Cosmocercoides dukae*; Harwood (1932) had previously reported *C. dukae*. In Kansas, Freiburg (1951) found but did not identify nematodes. In Oklahoma, Kuntz (1941) reported 1 species of cestode and 2 species of nematodes in *G. olivacea* but did not identify them. More work will be required to determine whether the Continental Divide is the eastern boundary of the range of *A. incerta* and *A. itzocanensis*.

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